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AUTHOR Fretwell, David; Pritz, Sandra
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ABSTRACT

The heritage and history of the United States have influenced its consistent tendency toward voluntary adoption of standards achieved by consensus and toward guidelines rather than regulations. Major initiatives have continued to move toward a systematic, if not a centralized or standardized, approach. Over the past 20 years, varying degrees of emphasis have been put on one or another of the skills--occupational, basic or general education, and general employability--that are combined in "work." The trend toward competency-based education makes it possible for occupational standards and certifications to be placed within a consistent theoretical framework. Such programs are flexible, amenable to change, and accessible; they incorporate a mix of skills. Current initiatives continue to address and integrate development of occupational, basic, and employability skills in an outcome-based approach that relates a standard to the desired outcome and provides for realistic flexibility in how the outcome is achieved. Occupational standards are the accountability tool that can drive a very adaptable system and keep it on target. Current initiatives include industry's responses to demographic and structural change, government involvement of all stakeholders through grants to develop national skill standards, and critical interrelated federal legislative initiatives. Economic progress is dependent not only on the setting of the standards but on their acceptance and implementation. (Contains 16 references.) (YLB)

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# OCCUPATIONAL STANDARDS AND CERTIFICATION: PAST-CURRENT-FUTURE TRENDS IN THE UNITED STATES

by

**David Fretwell**
**The World Bank**

**and**

**Sandra Pritz**
**Center on Education and Training for Employment**
**The Ohio State University**

**for presentation at the**
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**University of Milan, Italy**

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**Occupational Standards and Certification:**
**Past-Current-Future Trends in the**
**United States**

by David Fretwell and Sandra Pritz
The World Bank Center on Education and Training for Employment
The Ohio State University

## I. Introduction

Development of relevant occupational standards and certification programs can be discussed as a means of improving the quality of performance of education and training for work. Productivity is a key issue; what workers around the globe can do with available resources will ultimately determine the standard of living for all of us as global citizens. However, it should be stressed that the setting of occupational standards and the implementation of certification processes must be recognized as inextricably linked to the education and training system and to the business and industry of the economy they support. It is difficult to discuss them alone without giving an erroneous impression, given that they work only within the complex system and economy they support. The context of each system component matters.

Therefore, in viewing the current stage of development in occupational standards and certification in the United States, it is necessary to discuss 1) the broader context of the U.S. history and cultural heritage, 2) the considerable technical advancements in the field over the past 20 years, and 3) the current political environment and concern over international trade and productivity for now and the next century.

Furthermore, we are examining "work," which is itself a complex interplay between types of skills and related activities that defy easy definition and compartmentalization, but that must be discussed for clarity of communication and progress in the system. These include 1) occupational skills (e.g., weld a joint, fix an automatic transmission, take a pulse), 2) basic or general education skills (e.g., applications of math, science, reading), and 3) general employability skills (e.g., get along with co-workers, utilize safe working practices). Over the course of this century in the U.S., there have been varying degrees of emphasis on one or another of these types of skills. One of the joys of living in today's world is that we seem to have a deeper

understanding of the rich interrelationship between them and of how we might enhance them all together.

## II. Factors that Affect Developments in the Field

Although the U.S. situation is depicted in this discussion, each country has its own heritage to recognize and account for. The U.S. situation is characterized by heterogeneity and individual choice. The country was formed by European immigrants who themselves came from a number of countries; the influx has only broadened over time as major waves of immigrants from other continents, most recently from Southeast Asia, have chosen to move here. These people brought not only diversity of work styles and standards, but also independence, many of them (particularly in the early years) leaving their country of origin to escape national rules and regulations. Thus it is not surprising that both individuals and institutions have tended to resist national, and in many cases, regional or state standards, and that the form of government that proved viable is democratic and decentralized, with an emphasis on state and local rights and responsibilities. Likewise, the education and training system reflects these characteristics, and while some might view this as fragmented and lacking in cohesion, it has proven relatively resilient for the variety of demands placed on it.

The emphasis on a market economy and lack of regulation on the economy and private sector has placed responsibility on the individual which, in turn, has created an environment fostering development of flexible work rules and standards relevant and practically applied to a local environment. Another contributing factor is certainly the size of the country, given that a welder in a small remote village in Alaska has very different demands and working conditions than a shipyard welder in Virginia or a steel worker in an automated urban factory. Any efforts to mandate national standards in this environment have, naturally, met with considerable opposition, and one of the strengths of the system has been its applicability to specific needs.

## III. Developments Over the Past Twenty Years

The U.S. heritage and history have yielded its consistent thrust toward voluntary adoption of standards achieved by consensus and toward guidelines rather than

regulations. Major initiatives have continued to move toward a systematic, if not a centralized or standardized, approach.

**Occupational Skills**

Over the years, numerous certification programs (at last count, about 175), have been developed and implemented by various national associations which administer elective tests of various types (e.g., the well known CPA exam of the American Institute of Certified Public Accountants and tests from the American Welding Society). Some occupations can be practiced in many states only after licensure for meeting certification standards; among them are law and cosmetology In a few cases, Federal standards do pertain, as with air traffic controllers who are subject to the Federal Aviation Administration. As can be surmised, more control has tended to be exercised where public safety has been perceived to be at stake.

Occupational standards that are designed less explicitly for safety and more to foster quality, productivity, and linkages of business and industry to the education and training system have developed more slowly and have been more decentralized. Extensive work was done during and after World War II by the military, which maintains systematic rating systems and which initiated the instructional systems design (ISD) process that tied the systems to training. Significant work has been done by individuals (e.g. James Crystal, James Greenan) to identify common skills among jobs for curriculum purposes, to enhance job mobility, create career ladders, and to assist dislocated workers. And states such as Ohio, Oklahoma, and Oregon were identifying both occupational and related basic education skills standards in the 1970's and 80's. Some of these efforts folded in with extensive career education systems that depended on similar analysis and that led to Federally-financed cluster projects to provide information for groupings of occupations such as transportation, health, and graphic arts/communications. Also local initiative, along with an awareness of common needs, gave rise to major consortium efforts that continue today, such as the Vocational-Technical Education Consortium of States (V-TECS), currently composed of 23 state departments of vocational and/or technical education and six federal agencies, and the National Occupational Competency

Testing Institute (NOCTI), both of which have linked their standards work to development of performance and knowledge test banks.

Early industry-based initiatives that have been both national in scope and in influence on entry and advancement in jobs are those by the American Welding Society and the National Institute for Automotive Service Excellence (ASE). The latter began certifying auto mechanics in 1972 to improve worker competency. ASE currently certifies individuals in 24 different exam areas, plus it certifies training programs in eight major areas after rigorous evaluation, so that there is a piggyback effect of certification of both individuals and programs.

## IV. Basic or General Education Skills

In the 1970s and early 1980s, against the backdrop of growing international competition and an insistent need for military preparedness, education in the U.S. came under fire from a variety of sources, especially national commissions whose reports urged that an excellence movement be launched. Excellence was essentially equated with higher standards in the general academic program delivered in longer school days, weeks, and years in the hope of reversing declining college entrance aptitude test scores and a lower relative standing among industrialized nations. Concern was expressed over high dropout rates and illiteracy among school leavers, and the reports called for increased access to "excellent" education for the underserved minority, female, and otherwise disadvantaged learners, but the reform effort failed to deliver adequately in this respect. Although the nature of the prescribed reforms was not suited to the needs, interests, abilities or future schooling prospects of all students, this movement did serve to highlight the importance of core academic skills in a rapidly changing world. Furthermore, it gave rise to widespread state adoption of school proficiency testing, an academic counterpart of the standards trend. In a number of states, legislative assemblies took control from educators and mandated proficiency tests.

By the mid 1980's, even more dramatic shifts in the work world had clarified the need to prepare the workers of the future very differently from those of the past, with a focus on greater flexibility. It was becoming clear that the jobs of the future would demand higher levels of basic skills in technology, communication, math, and science,

and that low skill jobs were declining rapidly. Furthermore, studies in cognitive science were pointing to the viability of learning in an applications context. Issues of providing a balance of academic and vocational/technical education to better meet the demands of the workplace and to better engage reluctant learners and "the forgotten half" were addressed by the Center at The Ohio State University in research syntheses--**Bridging Vocational and Academic Skills** and **The Dropout Prevention Series** on which much technical assistance was based. A mandate to address these issues was enacted into law with the 1991 Perkins II Federal legislation for Vocational and Applied Technology Education. It was this legislation that also incorporated performance standards as an accountability tool, requiring that each state implement their own program quality system of core standards and measures of performance for secondary and postsecondary vocational education programs.

**General Employability Skills**

The driving forces, including growing concern about dropouts and inability of youth to undertake active job search and function effectively on the job, pointed to a need to help people behave in ways employers would find suitable for their workplace, including such skills as accepting responsibility and cooperating with others. These concerns were greatly exacerbated by the significant demographic shift of the U.S. population and its implications for the workplace. The U.S. Department of Labor projects that, by the year 2000, 75 percent of entrants to the workforce will be women and minorities, many of whom are immigrants and many of whom have received less schooling than the traditional white male worker.

Slow population growth has resulted in the number of older Americans in the workforce increasing while the youth segment has been decreasing. Thus, employers now and into the next century will draw from a smaller pool of potential workers. They are finding that many of their applicants have inadequate job competencies just at the time they need a broader range of competencies than ever before. Workforce entrants, dislocated workers, and incumbent workers can all be assisted in gaining and retaining jobs by training in general employability skills.

**The Necessary Mix of Skills in a Competency-Based Environment**

Over the past twenty years a persistent trend has grown that may be likened to a quiet educational revolution and that makes it possible for occupational standards and certifications to be placed within a consistent theoretical framework. That trend is toward competency-based education rather than the traditional content-focused and time-based approaches, and it has particularly gained ground with regard to workforce education and training. In a competency-based system, what the learner should be able to do (a competency) is carefully identified, verified by experts (business and industry in most cases), and made public in advance, as are the criteria (observable and measurable) to be used in assessing achievement and the conditions under which achievement will be assessed. The learners' knowledge and attitudinal behaviors are taken into account, but actual performance of the competency is taken as the primary source of evidence.

A competency-based approach is nicely consistent with the findings of teaching and learning research, in that education and training programs using this approach can be readily paced for the individual rather than a group in lockstep, and maximum responsibility is placed with the learner, whose progress toward meeting competency standards is facilitated by an instructor who provides opportunities for development and practice of skills with realistic (or authentic) problems and situations, which may be of a team or cooperative nature. Such programs are quite flexible and amenable to change as well as accessible to people with different learning styles. They can and do incorporate a mix of occupational skills, basic or general skills, and employability skills.

A series of reports has been effective in drawing the strands of the workforce preparation perspectives together and in emphasizing the necessary mix of skills. These have included

- ***Investing in People: A Strategy to Address America's Workforce Crisis*** (Commission on Workforce Quality and Labor Market Efficiency 1989)
- ***America's Choice: High Skills or Low Wages!*** (Commission on the Skills of the American Workforce 1990)
- ***What Work Requires of Schools*** (Secretary's Commission on Achieving Necessary Skills [SCANS] 1991).
- ***America 2000 Goals*** (National Education Goals Panel 1991)

***Investing in People***, the earliest report, set the stage by making recommendations (44) on ways to increase the excellence of the U.S. work force. It signalled a need for coordinated action, which may have paved the way for ***America's Choice***, for which the Commission had broad-based representation from government, business, and education. ***America's Choice*** was stronger in stating the urgency of need, and one of its main contributions was the clarity of the question--High skills or low wages? The **What Work Requires of Schools** (SCANS) report followed through on specifying the skills needs inherent in making a "high skills" choice.

One of the great contributions of the SCANS report was clear communication from an empirical basis of the need for occupational, basic, and employability skills along with reasoning, thinking, and learning to learn. A variety of similar theoretical frameworks of skills categories had been advanced (by states and others such as the American Society for Training and Development and the National Academy of Science), and these may have prepared the field, but the SCANS report gained a broad visibility and acceptance as a platform from which to move. A long-standing communication gap between education and employers stemming partly from the lack of common language had been narrowed somewhat.

## V. Current Initiatives

Current initiatives continue to address and integrate development of occupational, basic, and employability skills in an outcomes-based approach that relates a standard to the desired outcome and provides for realistic flexibility in how the outcome is achieved. In this way, occupational standards are the accountability tool that can drive a very adaptable system and keep it on target. This approach fits well with the U.S. decentralized philosophy and the desire to make adaptations for particular needs. It also allows for education and training to take place in a variety of settings, including school and work. And it provides an avenue to deal in specialized ways with not only labor market outcomes and learning outcomes, but also access outcomes in response to demographic shifts.

**Demographic and Structural Change Responses by Industry**

As indicated previously, women and minorities are the fastest growing segments of the workforce and the number of older Americans has also been increasing while the 16-24-year-old segment has been decreasing. Flexible staffing options are being incorporated as companies recognize that to recruit and retain a quality workforce requires adapting jobs for different kinds of people than they have been accustomed to. A standards-based system is not derailed by the push toward redesigning jobs, a push which is also fueled by broader economic and competitive pressures and the need to contain costs. The use of temporary employees, independent contractors, outsourcing, job sharing, flextime and work-at-home options are examples of such redesign.

These and other basic structural changes in the workplace (such as moving to less hierarchal company structure, corporate and military downsizing, and reassignment of functions) have also displaced large numbers and new groups of workers, including those in white-collar occupations. Labor mobility and the need for transportable credentials have thus been heightened. Entrepreneurship has emerged as a strong alternative to corporate work, and indeed small and medium-sized companies are providing the largest number of new jobs in the economy. These companies can benefit from well-understood credentials as they work to gain a place in the market.

Restructuring of workplaces and redesigning of occupations in response to technological as well as organizational change will continue. It is, therefore, essential that any standards and certification process be iterative and dynamic. This issue has amplified importance in terms of some of the obstacles to development of certification systems that have been cited. These include the fact that they take a number of years to develop (2-7 years according to the General Accounting Office, 1993), and an additional several years to gain credibility and acceptance, all of which is costly. Perceived benefits such as enhancement of workers' skills and transferability of skills, assistance in finding qualified workers, and improvement in curricula for training and retraining programs all depend on an up-to-date system that pays for itself. Further, the decisions on some of the training program improvements tend to be made with some lag, so it is imperative that the foundation for those decisions not be obsolete. Industry, rather than

government, ownership and control of the system is viewed as a critical feature in terms of motivation to ensure that it stays up to date.

**Government Plus Stakeholders**

The government does not have to control the system to play an important role. In the United States, the government has helped to bridge a major obstacle, namely the inability to involve all stakeholders (employers, employees, and educators) previously, in spite of the fact that the three-way collaboration is judged to be critical to program success. The U.S. Departments of Labor and Education are currently sponsoring grants to 22 major industries to develop national skill standards (occupational, basic, and employability) and link them to education and training. The industries and grantees are listed in Table 1. Applicants for these grants were required to involve business-labor-education stakeholders. Ideally, the government could also play a coordination role that would help to standardize terminology and to share process insights across the groups. It is important to note that many of the grantees are existing grass roots consortia or trade associations that are continuing or deepening their work under Federal auspices.

Many Federal assistance efforts are coming with a cost-share price tag that helps to ensure a real commitment by those who participate. Actually, sharing of costs has been prevalent in development of privately financed systems as well, where consortium efforts are common. Participants can retain independent choice and yet spread the costs and gain in synergy and breadth of applicability. Some initiatives have been the result of local or state financed effort. For example, the Ohio Department of Education has sponsored Ohio Competency Analysis Profiles (OCAPS) that have been coordinated by the Center on Education and Training for Employment and developed by consensus of business across the state for forty key occupations. These link occupational competencies to basic and employability skills which are, in turn, linked to an assessment system. The profiles are used statewide as a foundation for program improvement. The process just described is typical of the sequencing that is deemed logical for U.S. systems: occupational analysis, verification, development of measures (often including test banks), the establishment of standards or desired levels of performance, development of education and training programs, implementation of program standards and, hopefully,

## THE NATIONAL SKILL STANDARDS PROJECTS

| INDUSTRY | FUNDED BY | GRANTEE |
|---|---|---|
| Agriscience/Biotechnology | Dept. of Ed. | National FFA Foundation |
| Air Conditioning, Refrigeration & Power | Dept. of Ed. | Southern Association of Colleges and Schools, VTECS |
| Automotive, Auto Body & Truck Technicians | Dept. of Ed. | National Automotive Technical Education Foundation |
| Biotechnical Sciences | Dept. of Ed. | Education Development Center |
| Chemical Process Industries | Dept. of Ed. | American Chemical Society |
| Computer Aided Drafting | Dept. of Ed. | Foundation for Industrial Modernization |
| Electronics | Dept. of Ed. | Electronics Industries Association |
| Food Marketing Industry (supermarket) | Dept. of Ed. | National Grocers Association |
| Forest/Wood Products | Dept. of Ed. | Production and Manufacturing Foundation for Industrial Modernization |
| Hazardous Materials Management Technician | Dept. of Ed. | CORD |
| Health Science and Technology | Dept. of Ed. | Far West Laboratory |
| Heavy Highway/Utility Construction | Dept. of Ed. | Laborers--AGC Ed. & Training Fund |
| Human Services Occupations | Dept. of Ed. | Human Services Research Institute/EDC |
| Phototonics Technician | Dept. of Ed. | CORD |
| Printing | Dept. of Ed. | The Graphics Arts Technical Foundation |
| Welding Occupations | Dept. of Ed. | American Welding Society |
| Electronics | Dept. of Labor | American Electronics Association |
| Electrical Construction | Dept. of Labor | National Electrical Contractors |
| Industrial Launderers | Dept. of Labor | Institute of Industrial Launderers |
| Metalworking | Dept. of Labor | National Tool and Machining Association |
| Retail Trade | Dept. of Labor | National Retail Federation |
| Tourism, Travel and Hospitality | Dept. of Labor | Council on Hotel, Restaurant and Institutional Education |

Source: Vocational Education Journal, January 1994

program improvement. VTECS and NOCTI, previously mentioned, are engaged in this work as well, with their operations financed by consortia of participants.

**Quality Improvement**

The use of performance standards as a quality improvement tool fits integrally with the total quality management (TQM) concept which is based on the theories of W. Edwards Deming, Joseph Juran, Philip Crosby and others and which has swept U.S. business and education. The basic idea is to establish standards and procedures that guarantee the quality of an organization's products through continuous monitoring rather than through one final inspection. It relies on the expertise and commitment of all members of an organization through participatory management that involves input, problem solving, decision making, and continued learning to learn.

Because these critical thinking activities also tally with our best understanding of the elements of effective teaching and learning, we are finding a most promising convergence that contributes to the viability of business-education partnerships as never before.

**Critical Interrelated Federal Legislative Initiatives**

It is generally agreed that real progress in helping people meet meaningful standards rests in a true collaboration between education and business and industry. Given a history of their seeming inability to communicate or even speak the same language, real strides have been taken recently. The Federal government is nurturing the relationship and has capitalized on it in important initiatives such as establishment of a National Skill Standards Board. The Board is to help business, industry, educators, and other key groups develop and implement a national system of voluntary industry skill standards and certification that will have long-term viability. Provisions inherent in the Goals 2000 legislation, tech prep (which provides for articulation between secondary and postsecondary education and business and industry), and the School-to-Work Opportunities Act (which embodies coordinated school-based and work-based learning) are all related initiatives. All of these mandate cooperative involvement, and the systematic setting of desired outcomes is the linchpin on which they hinge. These

desired outcomes involve occupational skills, basic skills, and employability skills in a mutual reinforcement that reflects the real and complex world. The strongest reason that can be advanced for why these initiatives are likely to work well is that they build realistically on existing state/consortia/industry efforts to build standards as opposed to starting something brand new or trying to enforce national standards which would not be accepted or workable in the U.S.

## VI. Summary

Finally, the United States seems to be poised for coordinated and incisive action to deal creatively with the constant dynamic state of transition that the 21st century workplace promises to offer in continuing challenges. The Clinton Administration has demonstrated a firm commitment to human resources development. The passage at the end of March of the Goals 2000 legislation signals a ratification of the "High Skills" choice and implants development and use of performance measures and standards in the system. Although some of the goals lack operational definition as yet, including the goal specifying that "all adults will possess the knowledge/skills needed to compete in a global economy," the direction has been established. Indeed, this statement signifies explicitly that an important purpose of education for all is preparation for work, previously a point of some contention.

The results of these significant initiatives will be positive to the degree that there is a sensible adherence to these principles:

- involvement and ownership for all stakeholders in a voluntary system of guidelines built on natural incentives rather than control mechanisms, as is consistent with the country's deeply valued independence and democratic choice
- recognition of the broad diversity that characterizes the nation
- purposeful and systematic reflection of dynamic complexity rather than unrealistic simplification that often seems attractive but is untenable in application.

As all those who have been involved in occupational standards (as well as related basic and employability standards) work are well aware, the essence is not in the setting

of the standards but in their acceptance, their implementation, and their contribution to improvement in human resource development, which is the core of economic development. The occupational standards we have been discussing do not exist in an isolated sphere, but are integral to a holistic system that enhances economic development.

Although the world environment is increasingly competitive, and all countries are driving hard to gain or maintain their place in it, there is also evidence via the North American Free Trade Agreement (NAFTA), the European Community (EC), and the General Agreement on Tariffs and Trade (GATT), that cooperation and collaboration are not antithetical concepts to competition. The swift adoption of IS0 9000 standards for quality documentation gives evidence that cooperation can occur on international standards that can provide further integration of the world community. The key is being placed in the lock. It will take concerted effort, working within our systems and contexts, to swing open the doors of economic progress.